Initial	Date
MHE	3/12/13
CHC	3/11/13

BA WTR
WR ND
Mail Stop 60189

MAR 1 2 2013

Memorandum

To: Project Leader, Tewaukon National Wildlife Refuge Complex

From: Chief, Division of Water Resources

Subject: 2012-2013 Annual Water Use Report/Management Plan

The reports for Tewaukon and Storm Lake National Wildlife Refuges have been reviewed and approved as submitted. The 2013 Water Management Plan for Tewaukon NWR will be forwarded to the North Dakota State Engineer's Office as your 2013 State Operation Plan. Thank you returning the data loggers that we requested last year.

Thank you for your timely submission of the report and attached is the signed approval page for your files.

S/ MEGAN ESTEP

Attachment

bcc: WTR rf

WTR:CCordova:cc:03/11/2013
I:\WATERUSE\ND\TEWAUKON NWR\wateruse_12.doc

TEWAUKON NWR COMPLEX

ANNUAL WATER MANAGEMENT PLAN
2012 WATER USE REPORT
2013 MANAGEMENT PLAN

Prepared by: Kristine Askerooth Date: _____

Submitted: _____ Date: 2/28/13
Rob Bundy, Project Leader

Approved: _____ Date: 3/8/2013
Regional Refuge Supervisor

Concur: _____ Date: 3/12/13
Chief, Water Resources Division

Tewaukon National Wildlife Refuge Complex
2012 Water Use Report
2013 Water Management Plan

REFUGE MANAGED WETLANDS

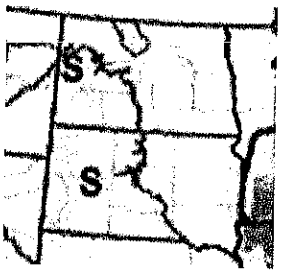
CCP Refuge 1.5 Objective: Annually provide for approximately 20% in dry, 20% in shallow, 20% mid-depth, and 20% open water wetland conditions on Refuge managed wetlands and manage remaining 20% as a reserve to adjust to local climatic and habitat conditions.

1. **List of Water Rights**
   See Appendix 1.

2.

Month	Temperatures		Precipitation	
	High (Average)	Low (Average)	Rain (inches)	Snow (inches)
January	30.5	10.3		1.5
February	31.8	11.5		1.5
March	52.8	28.2		3.4
April	58.9	36.6	1.9	0
May	72.1	49.1	1.11	
June	81.8	57.8	1.55	
July	88.1	64.3	0.6	
August	82.4	53.2	1.02	
September	75.9	40.6	0	
October	54.3	32.5	0	0
November	40.3	21.5		0
December	22.3	4.7		0
Totals:			**6.18**	**6.4**

Information taken from ND Agricultural Weather Network website http://ndawn.ndsu.nodak.edu/
The Britton, SD weather station was used. Precipitation varied widely across the three counties however all three showed significant decreases. The winter of 2011-2012 was mild and dry with little to no snowfall throughout the winter. January saw 15 days over 32 degrees with four days in the 50's. Only a little over six inches of rain and six inches of snow fell all year compared to the average of 21. The growing season of 2012 in North Dakota was the 8th warmest and the 13th driest growing season among the last 118 years of North Dakota's climatological history since 1895. See drought maps on page 2. Virtually no precipitation fell from July into December. Temporary and seasonal wetlands dried up, semi-permanent wetlands began to shrink and large permanent wetland water levels began to drop by 1-2 feet. The Wild Rice River stopped running in July.



May 2012

October 2012

Intensity:
- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

Water Use – 2012

Pool 1 (Lake Tewaukon): Pool went into the spring at full pool (1148.00). Lower than normal precipitation caused all pool levels to steadily decrease throughout the year. Freeze-up at 1146.28

Parker Bay (east end of Lake Tewaukon): Boards remained in place to maintain a two foot water depth. Freeze up elevation was 1146.

Pool 2 (Cutler Marsh): Pool was filled to 1154 in the spring. Freeze up was at 1152.

Pool 2A: Pool was higher at freeze-up than in early spring. Freeze-up was 1153.50.

Pool 3 (Maka Pool): Water was maintained as low as possible to facilitate vegetation growth. Pool was dry at freeze up.

Pool 3A: Pool was dry at freeze up.

Nickeson Bottoms: This pool only received local inflows. Attempts were made to lower water levels whenever possible. Freeze up level was approximately 1151.75.

Pool 4 (River Pool): Pool 4 peaked on 4/24/12 at 1159.12. Pool was dry at freeze up.

Pool 5: Pool was filled to approximately 1160 and freeze up occurred at 1156.

Pool 5A: Pool was filled to approximately 1164. Pool was dry at freeze up.

Pool 6: Pool filled to 1167.5. Pool was dry at freeze up.

Pool 7: Pool filled to 1171. Pool was dry at freeze up.

Pool 7A: Pool was dry at freeze up.

Pool 8 (Hepi Lake): Pool 8 was filled to 1172. Pool was dry at freeze up.

Pool 9: Pool began the year full pool and due to inflows from Pool 8 froze up at approximately 1165.

Pool 10: There was no flow into this pool except local precipitation. Freeze up occurred at approximately 1175.

Pool 11 (West White Lake): This pool level peaked in the early summer and boards were pulled on to dry up the pool. Pool was dry at freeze up.

Pool 12 (East White Lake): Pool 12 received inflows from Pool 11 and when the water level got high enough it flowed into Pool 2 to the Wild Rice River. By freeze up, Pool 12 was at 1146.11

Pool 13 (Mann Lake): Mann Lake received only local runoff. Evaporation had lowered it to 1206.

Pool 14 (Sprague Lake): Peaked on 3/12/12 at 1214.88. Freeze up at approximately on 1212.43.

Pool 16 (Horseshoe Slough Group):
Only local inflows – keep out water from Wild Rice River. Attempts were made to release water into Wild Rice River when possible. The elevations of the Horseshoe Slough wetlands dropped considerably by the end of the fall and freeze up occurred at 1205.5 for Pool A and B; 1204 for C; 1205 for B West, B North, and C North; and 1204 for C South and C East.

3. Impoundment Data

Please see the attached chart (Appendix 2) for capacities for each pool at various elevations. No formal inflow/outflow records were maintained.

4. Location Map

See attached Refuge map (Figure 1 and 2) with all the management pools delineated.

Figure 1: Tewaukon Unit Managed Wetlands

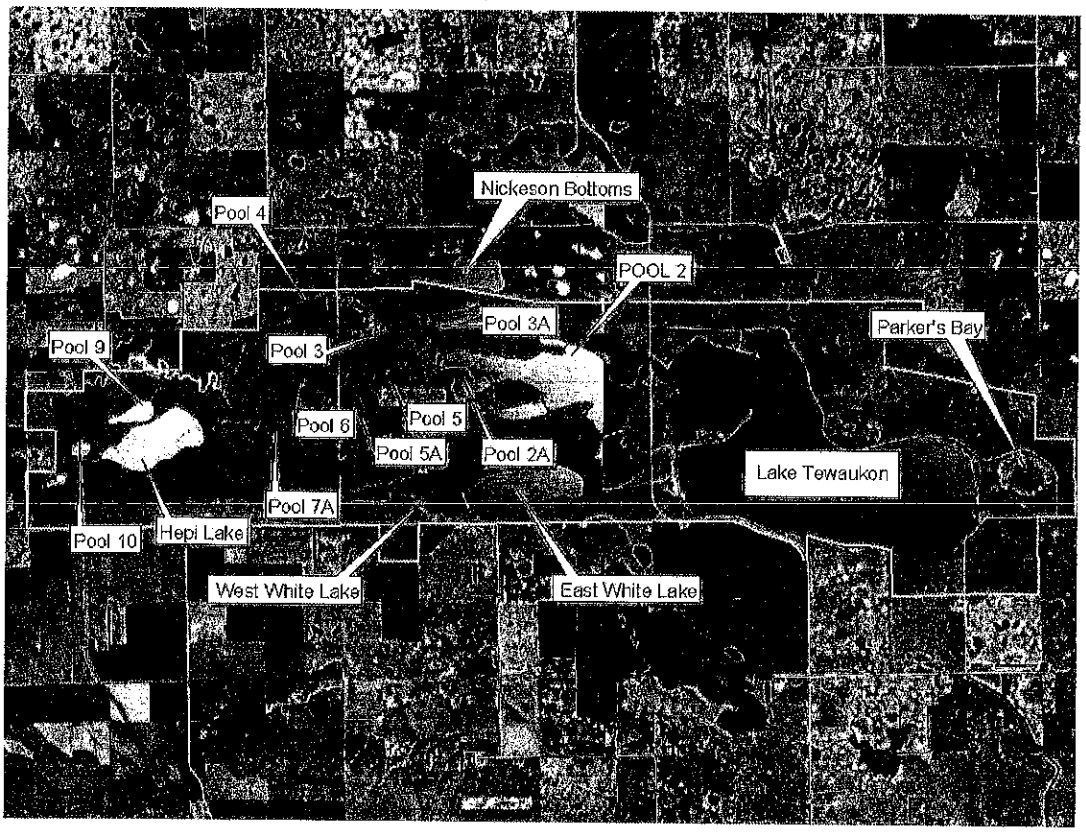
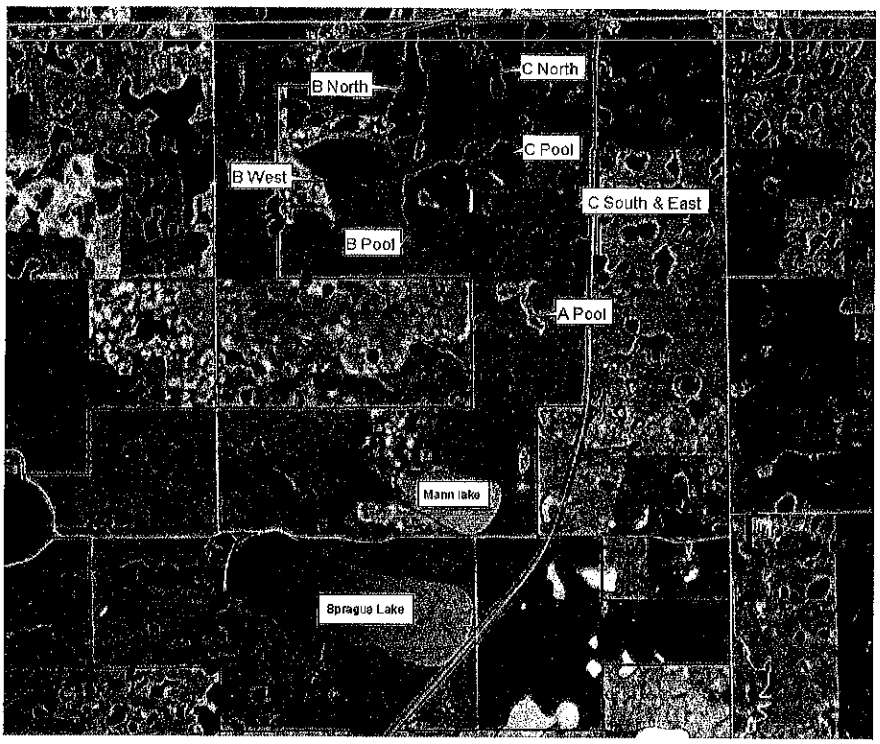


Figure 2: Sprague Lake Unit Managed Wetlands



5. 2013 Plans

Pool 1 – Lake Tewaukon - Maintain elevation at 1148 (full pool) if river flows allow.

Parkers Bay - Maintain at 2 feet in depth, below 1148, with minimal inflows to promote vegetation growth

Pool 2 – Depending on river flows, maintain elevation below 1146 to encourage emergent plant and invertebrate population growth.

Pool 2A - Maintain elevation below 1154.

Pool 3 - Maintain elevation below 1148.

Pool 3A - Maintain elevation below 1154-1155.

Nickeson Bottoms - Restrict inflows. Draw down naturally with evapotranspiration.

Pool 4 - Maintain elevation below 1155.

Pool 5 - Local inflows only.

Pool 5A – Local inflows only.

Pool 6 – Local inflows only.

Pool 7 – Local inflows only.

Pool 7A – If water flows from river allow, maintain pool at 1175.

Pool 8 - Maintain pool at 1172 or below.

Pool 9 - Maintain pool at 1164 or below.

Pool 10 - Maintain pool below 1172. No inflows.

Pool 11 – West White Lk – If water flows allow, maintain pool at 1148.

Pool 12 – East White Lk - Allow pool to drop through evaporation and restricting inflows.

Pool 13 – Mann Lake - Lower pool as the Wild Rice River goes down. Restrict inflows.

Pool 14 –Sprague Lake – If water flows allow, maintain pool at 1214.

A Pool Water levels local run-off only. Restrict inflows.
B Pool Water levels local run-off only. Restrict inflows.
B West Water levels local run-off only. Restrict inflows.
B North - local run-off only. Restrict inflows.
C Pool (North and & C Pool) - local run-off only. Restrict inflows.

Appendix 1

List of Water Rights

Water Right Filing No. 57: Declaration of Filing dated September 1, 1934 claimed 104 surface acres, for 397 acre-feet storage and 312 acre-feet seasonal use for Clouds Lake (Pool 8) now called Hepi Lake from unnamed tributary to Wild Rice River. Listed on the same sheet as Lake Tewaukon/White Lake, as per RO(EN) Marshall Fox's 11-14-83 memo. Water use in pools 5 through 10 is covered under this right, with Hepi Lake to be drawn down to fill these pools.

Water Right Filing No. 64: Declaration of Filing dated September 1, 1934, for Lake Tewaukon and East and West White Lake (including Cutler Marsh), 1417 surface acres, for 7198 acre-feet storage, 4251 acre-feet seasonal from Wild Rice River and unnamed tributary.

Permit #1261: 4852 acre-feet storage and 2287 acre-feet seasonal use, for a total of 7139 acre-feet from the Wild Rice River for fish and wildlife use. This permit covers additional storage and seasonal use in Lake Tewaukon, Cutlers Marsh and West White Lake; 409 acre-feet seasonal use to replace water to be diverted from the watershed by Sargent County Water Conservation District project; and total storage and seasonal use for Pools 3 and 4. Priority date December 28, 1964.

Tewaukon NWR #1262: 1,130 acre-feet yearly (635 acre-feet storage and 495 acre-feet seasonal use) for Sprague Lake, dated December 28, 1964, diversion from an unnamed creek in the SE1/4 NW1/4, Sec. 2.

Tewaukon NWR #1263: 686 acre-feet yearly for Mann Lake (total of 236 acre-feet comprised of 107 acre-feet storage and 129 acre-feet seasonal use) and Horseshoe Slough (total of 450 acre-feet comprised of 270 acre-feet storage and 180 acre-feet seasonal use) dated December 28, 1964, diversion from the Wild Rice River.

Tewaukon NWR #3816 Nickeson Tract: 571 acre-feet (474 acre-feet storage, 97 acre-feet annual use) for the Nickeson Bottoms, a tract jointly owned by the ND Game and Fish Department, US Bureau of Reclamation and US Fish and Wildlife Service (FWS). Diversion is from the Wild Rice River, W ½ Section 27, T. 130 N., LTL, R. 54 W. Priority date August 15, 1985. Received perfected water permit on August 14, 1997. Recorded in the Register of Deeds, Sargent County on March 3, 1998.

In December, the Service submitted an application for prescriptive water rights pursuant to the provisions of State Senate Bill No. 2182 for 859 acre feet.

Appendix 2

Pools, Elevations and Acres

Pool No. & Name	January 1, 2012			December 31, 2012		
	Elevation	Surface Acres *	Volume (acre ft.)*	Elevation	Surface Acres *	Volume (acre ft.) *
Pool 1 - Tewaukon	1148.18	1061	8566	1146.26	1035	6551
- Parker's Bay	1148.50	87	328	1146	70	133
Pool 2 - Cutler's Marsh	1148.18	190	414	1146.36	104	146
Pool 2A	1153.50	28	85	1152	24	46
Pool 3 - Maka Pool	1151.00	32	68	Dry	0	0
Pool 3A	1151.00	0	0	1151.75	-	-
Nickeson Bottoms	1153.45	-	-	Dry	0	0
Pool 4 - River Pool	1155.30	18	17	Dry	0	0
Pool 5	1158.12	2	2	Dry	0	0
Pool 5A	1160.00	0	0	Dry	0	0
Pool 6	1166.56	4	5	Dry	0	0
Pool 7	1170.95	9	9	Dry	0	0
Pool 7A	1172.50	0	0	Dry	0	0
Pool 8 - Hepi Lake	1171.25	82	111	Dry	0	0
Pool 9	1168.50	13	65	1165	10	25
Pool 10	1175.85	8	25	1175	7	18
Pool 11 - West White Lake	1147.64	36	43	Dry	0	0
Pool 12 - East White Lake	1147.64	100	453	1146.11	94	304
Pool 13 - Mann Lake	1207.00	46	164	1206	44	118
Pool 14 - Sprague Lake	1214.25	197	1678	1212.43	187	1330
Pool 16 - Horseshoe Slough						
- Pool 1 (A Pool)	1206.66	34	27	1205.5	6	5
- Pool 2 (B Pool)	1206.66	48	151	1205.5	42	98
- Pool 3 (C Pool)	1206.66	11	37	1204	8	12
- Pool 4 (B West)	1206.66	49	146	1205	38	73
- Pool 5 (B North)	1206.66	28	50	1205	15	0
- Pool 6 (C North)	1206.66	7	5	1205	0	0
- Pool 7 (C South & C East)	1206.66	20	44	1204	8	8

Appendix 3

WATER USE REPORT
SHORT FORM

Storm Lake NWR, Sargent County
Station Name

Spring 2011
Date of Inspection

Declaration of Filing: 9/01/1934
Water Right No.
Several
(729 acre-feet storage)
(516 acre-feet seasonal)

Drainage ditch (legal)
Sources(s)

Means of Diversion Uncontrolled
Rate Unknown

Water Diverted: Yes X No ____

Water Level est 654 acre-feet
(Elevation or Est. Storage Amount)

* Impoundment(s): Yes ___ No _X_
* Well(s)
Free Flowing none gpm
Pumped_____ gpm

Surface irrigation_____
(Crop) _____
Fish & Wildlife X virtually no public use
Stock_____

Overall Climatic Conditions: Above normal snowfall in the winter of 2010/2011 and a wet spring contributed to flooding in the eastern third of North Dakota. In 2009 the Corps of Engineers built a permanent dike to protect the town of Milnor from overland flooding. The permanent dike kept flooding in the town of Milnor to a minimum. The fall was very dry and the level of Storm Lake dropped.

Condition of Facilities: A diversion dam at the head of the feed ditch serving Storm Lake washed out well before 1976. The town dug a ditch beside the existing structure to allow for flood waters to move out of the town. At the end of 1997 the town placed a culvert with flap gate at an agreed elevation by a special use permit. The culvert is well above the existing structure and will allow flood waters to move out without impacting the water right. The ditch through the golf course was cleaned out in 1997 through a special use permit to remove flood waters. At that time the Golf Course placed two new bridges on the fee title property without notification of the Refuge. An agreement with the Service was signed to mitigate the mowing of the fee title property with no mow areas along the golf course edges was signed in 1999. In 2005, the Service issued a permit to the City to use Glyphosate to manage cattail growth in the ditch. In 2006 an agreement between the US Fish & Wildlife Service and the city of Milnor was signed to lower an existing culvert. The culvert maintains the lake elevation and lowered the management level in Storm Lake by one foot (from 5 to 4 feet).

Proposed Water Program: No water management capability is present. Water runs down the ditch into the lake to an unknown degree each spring. Water did fill Storm Lake in 1993. High waters and overland flooding have resulted in the feeder ditch becoming an outlet for Storm Lake water into the legal drain.

Comments: The lake serves as a waterbird resting area by Canada geese, canvasbacks, redheads, lesser scaup, mallards, teal, gadwalls, western grebes, pelicans in high water years. Water levels fluctuate without management. If active management was initiated, some degree of improvement in nesting and brood rearing habitat might be gained by a cycle of draw down management. It is questionable if the benefits would be worth the costs.